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ABSTRACT

The goal of this project was to significantly affect algebra achievement, attitudes toward mathematics and science, course selection, and career aspirations of a minimum of 48 ninth-grade female students. These students were identified by high school teachers as being one or more of the following: a hard-working student unable to grasp material in a typical large size class setting; a student who successfully completed the year's previous mathematics course but who is unable and/or unmotivated to grasp algebraic material; or a student who is a high achiever in other areas but has a mental block or anxiety reaction to studying mathematics. The project consisted of three five-part workshops, each enrolling an average of 17 students (51 students were selected for the program). Each workshop included lecture, problem-solving sessions, hands-on computer experience, discussions on improving study skills, and a panel presentation on career opportunities in high technology fields given by women from such companies as Bell Laboratories. Results show that students who enrolled in the program improved in algebraic skills, problem-solving, and in performance in computer activities. In addition, a substantial improvement in their attitudes was noted and reactions to the career panels was very positive. (JN)

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IMPROVING NINTH GRADERS' ALGEBRA ACHIEVEMENT - THE KEY TO FUTURE SUCCESS IN MATHEMATICS AND SCIENCE - THROUGH AN INTENSIVE WORKSHOP INTERVENTION EXPERIENCE

FINAL REPORT
TO
NEW JERSEY DEPARTMENT OF HIGHER EDUCATION
CONTRACT NUMBER 85-990600-397

by

Dr. Virginia McGlone, Project Director
Chaiman, Department of Mathematics
College of Saint Elizabeth
Convent Station, N.J. 07961

August 1, 1985

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Virginia McGlone
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

SE 045 865

Because they lack the necessary high school preparation, women are cut off from careers in a variety of technological fields. Taking four years of high school mathematics is the key to these careers, a key most women do not have. Although women account for fifty-two percent of the country's population, they comprise only a small percentage of mathematicians, scientists, computer scientists and engineers. Young women are not being adequately motivated and thus not being equally prepared by the schools to pursue high technology disciplines. Early in the education process, they must be given substantial encouragement to choose mathematics and science and to reaffirm this choice with optional courses.

The goal of this project was to affect significantly algebraic achievement, attitudes toward mathematics and science, course selection, and career aspirations of a minimum of forty-eight ninth grade female students. The target population consisted of female underachievers in Algebra I who were identified by high school teachers as having one or more of the following characteristics:

a) a hard working student unable to grasp the material in the typical large size class setting

b) a student who successfully completed the previous year's mathematics course and who is now unable and/or unmotivated to grasp the algebra material

c) a student who is a high achiever in other areas but

has a mental block or anxiety reaction to the study of mathematics.

Three five-part workshops, each enrolling an average of seventeen students, were presented at the College of Saint Elizabeth on fifteen Saturdays from 10 a.m. to 3 p.m. during the academic year 1984-85. Fifty-two participants engaged in the study of algebra developed from problem solving situations in the manner described by Whimbley and Lochhead. Analyzing the problem, critical and patient thinking, and varying techniques of solution (including diagrams) were emphasized. Computer science was included to illustrate the use of computers in problem solving, stimulate interest in technology, and provide a balanced and varied program. Each workshop included lecture, problem sessions, hands-on computer experience, discussions on improving study skills, and a panel presentation featuring career opportunities in high technology fields given by a distinguished group of women from companies such as Allied Corporation, Bell Laboratories, Bell Atlantic, and George B. Buck Consulting Actuaries, Inc.

A recruitment brochure describing the program and containing a brief application form was prepared and mailed to two hundred fifty schools. A letter describing the target population was included. A similar mailing was directed to the Guidance Departments of forty schools identified by the College of Saint Elizabeth Office of

Educational Opportunity Fund. The Project Director conducted a vigorous telephone campaign, speaking personally to numerous guidance counselors and mathematics teachers.

Each applicant was required to submit an application form and a brief personal statement of objectives in attending the workshop. In addition, a letter of recommendation from the applicant's mathematics teacher or guidance counselor was required.

The goal of this project was to enroll forty-eight female students. One hundred twenty-eight applications were received. On the basis of the application, the student's personal statement, and the letter of recommendation, a total of sixty-two students who best met the criteria of the target population were selected. Previous experience indicated that not all accepted students would actually enroll. As expected, fifty-three students accepted the invitation. Fifty-two students completed the program. A further break-down of enrollees follows:

Sex: 53 females
Ethnicity: 37 White, 11 Black, 4 Hispanic, 1 Pacific Isl.
School type: 34 public, 19 private; 8 urban, 44 suburban, 1 rural
Present grade level: 6 8th graders, 41 9th, 5 10th, and 1 11th grader
Attendance: 37 with 0 absences, 9 with 1 absence, 6 with 2 absences, 1 did not complete the program

Our assessent of the attainment of the major

objectives of this project is very favorable. We modestly surpassed our enrollment goal. A great strength was the extent to which the participants met the characteristics of the target population. They were students who were in need of help in algebra skills, who evidenced math anxiety, achieved well in other disciplines, and had the potential to improve. Thirty percent were minority females.

In each of the three sessions, workshop instructors and student aides judged that the students improved in algebra skills, problem solving, and in performance in computer activities. A substantial improvement in their attitudes was apparent. Participants definitely gained in confidence. An analysis of the responses of their high school teachers who replied to the evaluation process revealed that a majority of their students enrolled in the program improved in algebra competency, problem solving skills and motivation to study mathematics. More than two-thirds of the student participants judged that their performance in algebra had improved. Pre and post testing using an attitude scale revealed a significant improvement at the .05 level or better in attitudes toward mathematics in each of the three workshop sessions. Student reactions to the career panels were very positive. In summary, the evaluative activities to be described more fully in a later section indicate that the objectives of this program were fully achieved.

Workshop participants made extensive use of several facilities of the College of Saint Elizabeth. An attractive, well-furnished and well-equipped classroom in Mahoney Library was used for morning sessions in algebra and problem solving. This room , a Faculty Lounge, or a classroom were used for brown bag lunches and lunch discussions on study skills. Located in Henderson Hall, the Apple Computer Lab of the College of Saint Elizabeth was dedicated exclusively to this project on fifteen Saturday afternoons. This lab consists of eleven Apple II+ and IIe's as well as six printers. A classroom near the lab was reserved for project use. During the third session of this workshop, the project made excellent use of the College's newest facility, its IBM Data Analysis Laboratory, consisting of 16 IBM PC's.

Workshop participants benefited from being on a college campus and using college facilities. They saw numerous classes and college activities going on about them. They reacted very maturely to the environment. The opportunity to conduct these sessions on a college campus was a strength to the program.

Dr. Virginia McGlone, Professor of Mathematics and Chairman of the Department of Mathematics at the College of Saint Elizabeth, served as Project Director and workshop instructor. Sister Gabriel Mary Donahue, Associate Professor of Mathematics, was the other workshop

instructor. Sister Bernadette McCann, Director of Counseling, served as consultant on study skills. Associate Professor of Education, Sister Maureen Matthews gave a presentation on reading skills. The Dean of Admissions and the Director of the Educational Opportunity Fund as well as their staffs gave substantial assistance in providing mailing lists, distributing program brochures on school visits, encouraging participation in the workshops, and redirecting telephone inquiries to the Project Director. The Director of College Relations and her staff assisted with the recruitment brochure and newspaper coverage.

The institutional commitment of the College of Saint Elizabeth to this project has been clearly documented. Conducting this program on the campus of a New Jersey college permitted students and their parents to view first-hand the excellent facilities of one of the many fine institutions of higher education available in the state. This will encourage them to consider the pursuit of higher education at a New Jersey college or university and thus benefit the State of New Jersey and its system of higher education. Successful completion of this project also permitted the College of Saint Elizabeth to pursue effectively its goal of improving educational opportunities for women. Bringing students and parents to the campus was indeed a benefit to our recruitment activities.

Upon completion of each workshop, instructors and student aides were asked to evaluate various aspects of the program. On a five point scale with five the most favorable choice, the extent to which the students met the characteristics of the target population was rated an average of 4.6. Similarly, the extent of integration of algebra and computer science, the extent to which the participants improved in problem solving and their improvement in performance in computer activities were all rated four or above. The degree to which the panel presentations and the sessions on study skills enhanced the program were rated 4.4 and 4.5, respectively, by the workshop staff.

At the conclusion of each workshop, a student evaluation was conducted. Students overwhelmingly judged the course content and speed of presentation to be just right (as opposed to too easy or too difficult) and the subject matter presentation to be very clear. Of the forty-nine student respondents, thirty-two judged that their performance in algebra had improved while fifteen reported no change. Two did not answer. With regard to the study skills discussions, twenty reported that they were going to try some of the suggestions and twenty-eight said that the sessions made them think about improving their study habits. The few remaining did not find these sessions of interest. Six students said that the career

panel made them seriously consider a high technology career while forty-one reported that the panel provided information on which to make a future decision. Five were not interested. As a result of the workshop experience at the College of Saint Elizabeth, twenty-two students said they were more interested in studying mathematics and science while twenty-seven retained about the same level of interest.

All students who participated in the workshops were surveyed at the close of the academic year. Of the eighteen students responding, all but one expected to pass Algebra I with a grade of C or better. Seventeen students had decided to take mathematics and science in their next academic year. Geometry and Biology were the most common choices, although three students selected Chemistry. One student was undecided when polled. There were no changes in career choice from initial application to follow-up.

A twenty-item Mathematics Attitude Scale developed by Aiken and Dreger using the Likert scaling procedure was administered to each participant before and after the workshop. Analysis of the results reveals a significant improvement in attitudes toward mathematics at the .05 level or better. The scores and statistical analyses can be found in Appendix A.

After each workshop, the school mathematics teacher of each participant was asked to comment on changes in student

performance in the classroom setting, motivation of the student, and interest in the subject. Nineteen responses were received from high school mathematics teachers of participants. Thirteen indicated that the student's motivation to study mathematics had improved, one had improved very much and five remained the same. Regarding the extent of change in the student's algebra competency, ten improved, one improved very much and eight remained the same. The extent of change in the student's problem solving skills was that twelve improved and seven remained the same. The degree of change in interest in mathematics was that nine improved, one improved very much and nine remained the same.

Consultants on study skills and career panel participants were asked to evaluate their segment of the program. They saw their contribution to be of great benefit to the students. They judged that the students appeared fairly well interested or very interested in their presentation. They enjoyed the discussions with the students.

An immediate outcome of this project is that the mathematical background of the participants was strengthened. Students experienced many sound problem solving applications and practiced a wide variety of methods of solution. Another outcome is that they saw mathematics and computer science as valuable, viable,

attainable, and useful disciplines.

A very important outcome of this project is that career opportunities in mathematics, science, and computer science were explained to the participants. All female, the career panelists were impressive: a chemist from Allied Corp., a member of the Technical Staff of the Mathematics and Statistics Research Center of Bell Laboratories, an actuarial trainee with George B. Buck Consulting Actuaries, Inc., a programmer-analyst with Prudential Insurance Co. of America, and several members of the technical staff of Bell Atlantic. The panelists were informed and encouraging as they urged the students to continue their studies and give serious thought to the many opportunities that exist for women today.

Another immediate outcome stems from the interaction of the participants with female role models - the faculty at the College of Saint Elizabeth. student aides, consultants, and career panelists. Workshop participants met and talked with successful women from a wide variety of professions.

One long term benefit of this project is that the students will see the value of studying in a serious manner mathematics, science, and computer science as preparation for careers. Secondly, they will be in an improved position to make intelligent career choices. Finally, these young women have been encouraged to consider career

paths in technological areas in which women are presently underrepresented. It is hoped that this encouragement will turn the tide in their decision-making and result in a large number of them pursuing studies and a career in high technology. This would indeed be a long range benefit to the student and to the state of New Jersey.

Dissemination activities include a news release sent to seventy-five newspapers in New Jersey (See Appendix B). This press release resulted in numerous short pieces in local papers and a number of telephone inquiries concerning the program.

In late November 1984, an evening panel presentation and discussion on the topic Encouraging High School Girls to Study Mathematics and Science was scheduled. Guidance counselors and mathematics teachers of our first session participants were invited. A large mailing to over one hundred schools was undertaken. The mathematics and science faculties of all colleges and universities in northern New Jersey were invited. As part of our dissemination activities, an announcement that information concerning the present project would be available after the discussion was also included. An excellent panel was assembled: a Ph.D. research geneticist from Allied Corp., a high school mathematics teacher, and a technical staff member of A.T & T Communications. While the audience was small, the discussion was varied and interesting.

Another approach to reaching the same audience was made in May 1985. Ten high school mathematics and science teachers and four college faculty attended an afternoon workshop at the College of Saint Elizabeth on the previously mentioned topic. Suitable problems and sample methods of solution were part of the program. As part of dissemination activities, Sister Gabriel Mary gave a demonstration of the problem solving approach used during this project and she encouraged attendees to try it. Suggestions for implementing problem solving in the classroom were provided.

Future dissemination activities will be based in large part on the Final Report of the project. This report will be submitted for publication to Educational Resources Information Center (ERIC), a nationwide network that makes educational documents available to the educational community. The Project Director will author and submit for publication an expository article to journals such as The Mathematics Teacher and The New Jersey Mathematics Teacher. Established newsletters such as FOCUS of the Mathematics Association of America will be contacted and utilized to describe the project. The instructional staff will seek to present the project description and results at a local or regional meeting of the National Council of Teachers of Mathematics.

The mission of the College of Saint Elizabeth is the

education of women. As the oldest liberal arts college for women in the state of New Jersey, our commitment to this mission is unchallenged. Because of our reputation, the College was contacted by a local school district to help develop a program to improve participation in mathematics and computer courses by young girls enrolled in their junior high schools. It was agreed that the present project would be ideal for them and they are seeking funding for such a program to be conducted at their site.

The College of Saint Elizabeth applied to the New Jersey Department of Higher Education for continued funding of this project for fiscal 86 and the grant was renewed. In addition, the college has expressed willingness to offer its facilities during fiscal 87. The number of workshops would depend on funding. In the absence of outside funds, a modest fee would be charged.

APPENDIX A

SESSION I SCORES

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
UMBER OF CASES: 49 NUMBER OF VARIABLES: 2

	Before	After
1	47	43
2	21	33
3	46	47
4	16	39
5	18	21
6	50	46
7	66	65
8	46	57
9	77	76
10	56	68
11	65	65
12	48	51
13	49	70
14	61	71
15	23	27
16	49	50

---------- HYPOTHESIS TESTS FOR MEANS ----------

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
UMBER OF CASES: 49 NUMBER OF VARIABLES: 2

DIFFERENCE BETWEEN MEANS: PAIRED OBSERVATIONS

SESSION I - t TEST

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
UMBER OF CASES: 49 NUMBER OF VARIABLES: 2

HYPOTHESIZED DIFF. = .0000
MEAN = 5.6875
STD. DEV. = 8.2923
STD. ERROR = 2.0731
N = 16 (CASES = 1 TO 16)

T = 2.7435 (D.F. = 15) GROUP 1: After
GROUP 2: Before

PROB. = 7.541E-03

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SESSION II SCORES

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
UMBER OF CASES: 49 NUMBER OF VARIABLES: 2

	Before	After
17	17	24
18	50	59
19	32	30
20	60	57
21	41	65
22	30	41
23	57	56
24	60	59
25	22	34
26	28	29
27	17	15
28	27	30
29	54	59
30	38	46

---------- HYPOTHESIS TESTS FOR MEANS ----------

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
UMBER OF CASES: 49 NUMBER OF VARIABLES: 2

DIFFERENCE BETWEEN MEANS: PAIRED OBSERVATIONS

SESSION II - t TEST

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
UMBER OF CASES: 49 NUMBER OF VARIABLES: 2

HYPOTHESIZED DIFF. = .0000
MEAN = 5.0714
STD. DEV. = 7.4881
STD. ERROR = 2.0013
N = 14 (CASES = 17 TO 30)

T = 2.5341 (D.F. = 13) GROUP 1: After
GROUP 2: Before

PROB. = .0125

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SESSION III SCORES

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
MBER OF CASES: 49 NUMBER OF VARIABLES: 2

	Before	After
31	34	38
32	60	68
33	18	28
34	8	29
35	8	34
36	66	63
37	30	49
38	73	76
39	14	3
40	54	50
41	17	12
42	27	37
43	27	24
44	8	20
45	24	28
46	17	31
47	16	11
48	19	43
49	32	37

---------- HYPOTHESIS TESTS FOR MEANS ----------

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
MBER OF CASES: 49 NUMBER OF VARIABLES: 2

DIFFERENCE BETWEEN MEANS: PAIRED OBSERVATIONS

SESSION III - t TEST

EADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
MBER OF CASES: 49 NUMBER OF VARIABLES: 2

HYPOTHESIZED DIFF. = .0000
MEAN = 6.7895
STD. DEV. = 10.6801
STD. ERROR = 2.4502
N = 19 (CASES = 31 TO 49)

T = 2.7710 (D.F. = 18) GROUP 1: After
GROUP 2: Before

PROB. = 6.297E-03

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---------- HYPOTHESIS TESTS FOR MEANS ----------

HEADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
NUMBER OF CASES: 49 NUMBER OF VARIABLES: 2

DIFFERENCE BETWEEN MEANS: PAIRED OBSERVATIONS

COMBINED GROUPS

HEADER DATA FOR: A:ATTITUDE LABEL: Pre and Post scores
NUMBER OF CASES: 49 NUMBER OF VARIABLES: 2

HYPOTHESIZED DIFF. =	.0000		
MEAN =	5.9388		
STD. DEV. =	8.9429		
STD. ERROR =	1.2776		
N =	49	(CASES = 1 TO	49)

T = 4.6485 (D.F. = 48) GROUP 1: After
GROUP 2: Before

PROB. = 1.319E-05

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APPENDIX B

From: ANNE W. SMITH
539-1600 ext 378

for immediate release
(mailed 12/21/84)

Math Workshops for High School Girls at College of Saint Elizabeth

January 23 Is Deadline for February Series

Convent Station, N.J.--Three series of special math workshops at the College of Saint Elizabeth are helping ninth grade girls improve their problem-solving skills and prepare for advanced high school math courses. In the process, the participants gain an early insight into possible future careers in technological fields requiring extensive math knowledge.

Each series consists of five Saturday sessions from 10 a.m.-3 p.m. Applications will be accepted until January 23 for the next series, which runs from Feb. 9 to March 9. A third and final series will be offered in April. Enrollment in each series is limited to sixteen women students, who must be currently enrolled in Algebra I class in their high schools and be recommended for the program by their math teacher or guidance counselor.

Funded by a grant from the N.J. Department of Higher Education and offered without charge to the participants, the program also provides luncheon and a travel allowance depending on distance and cost of transportation for individual participants.

The workshop series, "Problem Solving Using Algebraic and Computer Techniques," provides intensive study of algebra and many kinds of mathematical problems including the application of numbers and v ariables. Students also learn to write and run elementary computer programs on Apple computers. Workshops include lecture and problem sessions, hands-on computer experience in the College computer labs, instruction in reading and study skills, and career discussions with young professionals in various fields who ar e recent graduates of the College with math, chemistry degrees.

"We hope to motivate the students to excel in algebra and pursue additional high school math and science courses and also to achieve access to

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careers in technological areas in which women are greatly underrepresented right now," said Dr. Virginia McGlone, chairperson of the Department of Mathematics at the College of Saint Elizabeth and project coordinator. "Girls have to become interested in math at the high school or even earlier stages,"she pointed out. "If they don't have algebra they often can't get into sciences and that cuts down on their college and career possibilities."

Taking four years of high school math is the key to many high-tech careers, she pointed out, but most women don't take such courses. "In addition women in our society often have a block with math or no confidence in their ability in the subject," she said. High schools students also often do not understand that math is required in a wide variety of other fields, such as the use of statistics in sociology, business, economics, psychology and home economics.

The workshops at the College of Saint Elizabeth will be especially useful, Dr. McGlone indicated, for "hard-working students unable to grasp the material in a large-size class setting who could benefit from small-group experience" and students with potential for improving performance if given sufficient and suitable in-depth instruction and direction.

"We want to help women with their math studies at a time when such assistance can turn the tide with respect to their career aspirations and preparation," said Dr. McGlone.

For further information, contact Dr. Mc Glone at the College of Saint Elizabeth Depa rtment of Mathematics, Convent Station NJ 07961.

# # # #

411
NEWTON, N.J.
NEW JERSEY HERALD
D. & S. 18,250

DEC 31 1984

Math workshops

CONVENT STATION — Two series of math workshops at the College of Saint Elizabeth are designed to help ninth-grade girls improve their problem-solving skills and prepare for advanced high school math courses. 8013

Participants also gain an early insight into possible future careers in technological fields requiring extensive math knowledge.

Each series consists of five Saturday sessions from 10 a.m. to 3 p.m. Applications will be accepted until Jan. 23 for the session which runs from Feb. 9 to March 9. Another session will be offered in April.

Enrollment in each series is limited to 16 students who are currently enrolled in Algebra 1 classes in their high schools and are recommended for the program by their math teacher or guidance counselor.

The program is offered without charge to the participants and includes luncheon and a travel allowance depending on distance and cost of transportation.

For further information, contact Dr. Virginia McGlone at the College of Saint Elizabeth, Department of Mathematics, Convent Station.

298
ASBURY PARK PRESS
ASBURY PARK, N.J.
D. & S. 143,000

JAN 13 1985

Math for girls

8210

CONVENT STATION — The College of Saint Elizabeth is offering series of math workshops to help ninth-grade girls improve their problem solving skills and prepare for advanced high school math courses.

Each series, "Program Solving Using Algebraic and Computer Techniques," consists of five Saturday sessions from 10 a.m. to 3 p.m. Applications will be accepted until Jan. 23 for the next series which runs Feb. 9-March 9. Another series will begin in April.

Enrollment in each series is limited to 16 girls, currently taking Algebra I in their high schools. The students must also be recommended by their math teachers ro guidance counselors.

The workshops are free and funded by the state Department of Higher Education. Lunch and travel allowance may also be provided, depending on the student's expenses.

For further information, contact Dr. Virginia McGlone, College of Saint Elizabeth, Department of Mathematics, Convent Station, N.J. 07961.

423
HILLSIDE, N.J.
TIMES
W. 3,000

JAN 10 1985

Math Workshops For Frosh Girls

8010

Three series of special math workshops at the College of Saint Elizabeth are helping ninth grade girls improve their problem-solving skills and prepare for advanced high high school math courses. In the process, the participants gain an early insight into possible future careers in technological fields requiring extensive math knowledge.

Each series consists of five Saturday sessions from 10am - 3pm. Applications will be accepted until January 23 for the next series, hich runs from Feb. 9 to March 9. A third and final series will be offered in April. Enrollment in each series is limited to sixteen women students who must be currently enrolled in Algebra I class in their high schools and be recommended for the program by their math teacher or guidance counselor.

Funded by a grant from the N.J. Department of Higher Education and offered without charge to the participants, the program also provides luncheon and a travel allowance depending on distance and cost of transportation for individual participants. For information call College math department.

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169
NEWARK STAR-LEDGER
NEWARK, N.J.
D. & S. 408,050

DEC 30 1984

Workshops aid 9th graders

The College of St. Elizabeth in Convent Station is accepting applications for the last two in a series of three special workshops to help ninth grade girls improve their mathematical skills.

To be held on five consecutive Saturdays beginning in February and April, the series, "Problem Solving Using Algebraic and Computer Techniques," is funded by a grant from the state Department of Higher Education.

Applications for the series that starts Feb. 9 should be received by Jan. 23. To be eligible, applicants must be enrolled in an Algebra 1 class and be recommended for the program by their math teacher or guidance counselor.

The Shopper, Wednesday, May 15, 1985—Page 9

ICHS freshman in St. E's program

LODI — Carleen Melvin, a freshman at Immaculate Conception High School, is participating in a special program at the College of Saint Elizabeth in Convent Station.

From numerous applicants, Miss Melvin was one of 16 students chosen to work in the seminar titled, "Problem Solving Using Algebraic and Computer Techniques." Girls enrolled in Algebra I courses were permitted to apply for this workshop and needed the recommendation of their math teachers and information from the school guidance counselors.

The workshop will be held through May Saturdays from 10 a.m. to 3 p.m. and is funded by the New Jersey Department of Higher Education. No fees are involved, and lunch is provided. Participants also receive a travel allowance.

The workshop covers numbers and variables, computer programs in BASIC on Apple IIe's, presentations from representatives of industry about career opportunities in high technology fields and sessions on reading and study skills.

Miss Melvin is the daughter of Mr. and Mrs. Dennis Melvin of Teaneck.

434
SUMMIT, N.J.
INDEPENDENT
W. 9,022

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JAN 16 1985

Math workshops add up to success for 9th grade girls in special program

8010.

CONVENT STATION — A series of special math workshops offered for free by the College of Saint Elizabeth in Convent Station are helping 9th grade girls improve their problem-solving skills and prepare for advanced high school math courses.

In the process, the participants gain an early insight into possible future careers in technological fields requiring extensive math knowledge.

Each series consists of five Saturday sessions from 10 am to 3 pm. Applications will be accepted until Jan. 23 for the next series, which runs from Feb. 9 to March 9. A third and final series will be offered in April. Enrollment in each series is limited to 16 women students, who must be currently enrolled in Algebra I class in their high schools and be recommended for the program by their math teacher or guidance counselor.

Funded by a grant from the N.J. Department of Higher Education, and offered without charge to the participants, the program also provides luncheon and a travel allowance depending on distance and cost of transportation for individual participants.

The workshop series, "Problem Solving Using Algebraic and Computer Techniques," provides intensive study of algebra and many kinds of mathematical problems including the application of numbers and variables. Students also learn to write and run elementary computer programs on Apple computers.

Workshops include lecture and problem sessions, hands-on computer experience in the College computer labs, instruction in reading and study skills, and career discussions with young professionals in various fields who are recent graduates of the College with math or science degrees.

"We hope to motivate the students to excel in algebra and pursue additional high school math and science courses and also to achieve access to careers in technological areas in which women are greatly underrepresented right now," said Dr. Virginia McGlone, chairperson of the Department of Mathematics at the College of Saint Elizabeth and project coordinator.

"Girls have to become interested in math at the high school or even earlier stages," she said. "If they don't have algebra they often can't get into sciences and that cuts down on their college and career possibilities."

Taking four years of high school math is the key to many high-tech careers, she pointed out, but most women don't take such courses. "In addition women in our society often have a block with math or no confidence in their ability in the subject," she said. High school students also often do not understand that math is required in a wide variety of other fields, such as the use of statistics in sociology, business, economics, psychology and home economics.

The workshops at the College of Saint Elizabeth will be especially useful, Dr. McGlone indicated, for hard-working students who could benefit from a small-group experience.

"We want to help women with their math studies at a time when such assistance can turn the tide with respect to their career aspirations and preparation," said Dr. McGlone.

For more information, contact Dr. McGlone at the College of Saint Elizabeth Department of Mathematics, Convent Station, 07961.

A CONTRACT BETWEEN

STATE OF NEW JERSEY

DEPARTMENT OF HIGHER EDUCATION — 85-990600-397 (Contract Number)

AND

College of Saint Elizabeth (Contractor)

COMPARISON OF ACTUAL TO BUDGETED EXPENDITURES

For the Period Ending 6/30/85

Account Description	Total Budget	Actual (Mo./Qtr.)	Actual Cumulative	Variance
Personnel	$ 10,814		$ 10,514	$300
Participant Stipend	1,800		1,762	38
Supplies	496		324	172
Miscellaneous	1,890		824	1,066
Secretarial Assistance	300		300	0
Use of equipment/facilities	3,000		3,000	0
Postage for follow-up	60		60	0
Programs for mathematics teachers & counselors	200		80	120
TOTAL	18,560		16864	1,696

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INSTITUTIONAL SUPPORT FOR GRANT #85-990600-397 WAS AS FOLLOWS:

Secretarial Assistance - 60 hours @ $5.00 per hour	$ 300
Use of equipment/facilities (computer laboratory, classroom, seminar room)	3,000
Postage for longitudinal follow-up activities	60
Program for mathematics teachers and guidance counselors	80
	$ 3,440

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FY1985 MATHEMATICS, SCIENCE AND COMPUTER SCIENCE
TEACHING IMPROVEMENT GRANT PROGRAM

CATEGORY B

Project Report Summary Form*

Institution College of Saint Elizabeth

Project Title Improving 9th graders algebra achievement - The key to future success in mathematics and science - through an intensive workshop intervention experience

Date August 1, 1985

Amount of Grant Award $15000

Amount Expended $13424

Balance (Unexpended Funds) $1576

Major Accomplishments

The problem solving and algebra skills of 52 females enrolled in Algebra I were strengthened. Computer activities demonstrated the role of computers in problem solving and stimulated interest in technology. Participants were encouraged to pursue in a serious manner the study of mathematics and science in preparation for careers. They were informed about the many opportunities that exist for women today, especially in technological fields in which women are greatly underrepresented.

Number of Students or Project Participants Served 52

* To be appended to the Project Report

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